P5974

Prognostic value of global tangential strain by three-dimensional echocardiography heart failure patients with intermediate ECG criteria for cardiac resynchronization therapy

M. Sugahara, K. Ashida, E. Fukuhara, H. Kishima, A. Goda, T. Mine, M. Ishihara, T. Masuyama

Hyogo College of Medicine, Cardiovascular Division, Department of Internal Medicine, Nishinomiya, Japan

Background: In the current clinical guidelines, cardiac resynchronization therapy (CRT) is recommended in heart failure (HF) patients with left bundle branch block (LBBB) with QRS width ≥150ms as Class I indication. In terms of HF patients with intermediate ECG criteria, prediction for benefit of CRT is still controversial in routine echocardiography.

Purpose: The aim was to assess whether three-dimensional (3D) echocardiographic indexes of global LV function at baseline has a prognostic value following CRT implantation in patients who fulfilled with intermediate ECG criteria.

Methods: We studied 62 HF patients who fulfilled with the indication criteria of CRT implantation according to current the clinical guidelines. In addition to routine two-dimensional echo, 3D echo dataset was acquired for determination of 3D global tangential strain (GTS) and 3D global longitudinal strain (GLS). We tracked predefined unfavorable outcomes for 3 years after CRT implantation: death, hospitalization due to worsening HF.

Results: LBBB with QRS width ≥150ms was evident in 26 of 62 patients (aged 68±11 years with 160±26 ms of QRS duration and 29±7% of LV ejection fraction), and the other 36 patients only fulfilled intermediate ECG criteria (QRS width 120–149ms or non-LBBB). Unfavorable events occurred in 21 patients (34%). The median GTS was –15.4%. Although GLS was not predictive, GTS greater than –15.4% had high probability of unfavorable outcomes over 3 years (Log-rank, $p<0.05$). There is no difference in the probability of unfavorable outcomes between LBBB and intermediate ECG criteria. Baseline GTS in patients with intermediate ECG criteria was associated with unfavorable outcomes: –12.6±2.6% vs. –17.3±3.8% ($p<0.05$). Outcome was better in the intermediate ECG criteria patients with GTS ≤–15.4% than in those with LBBB and in those with intermediate ECG criteria patients with GTS >–15.4% (Log-rank: $p<0.05$, $p<0.0001$, respectively).

Conclusions: Baseline GTS by 3D echocardiography is useful for predicting outcome over 3 years after CRT implantation regardless of the ECG criteria for CRT indication.